

## CENTRAL INTELLIGENCE AGENCY

## INFORMATION REPORT

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## SECURITY INFORMATION

COUNTRY	USSR (Moscow Oblast)	REPORT	[REDACTED]	25X1
SUBJECT	The Theoretical Department at Fryazino	DATE DISTR.	14 September 1953	
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This is UNEVALUATED Information

THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.  
THE APPRAISAL OF CONTENT IS TENTATIVE.  
(FOR KEY SEE REVERSE)

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1. Research orders for the Theoretical Department at Institute 160 in Moscow-Fryazino were formulated by the Soviets. The work of this department was to support the development work done in the laboratories.

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- a. Approximate and exact calculations of resonant frequencies of a magnetron (multicavity and rising sun) by means of an equivalent circuit diagram and Maxwell equations.
- b. The capacity of a wave-changing condenser.
- c. The potential distribution in a cylindric cavity.
- d. The theoretical extension of the terms ("current" and "tension") in regard to cavity conductors. (Hohlleitern).
- e. Compilation of calculation methods for resonant frequencies occurring in cavities and cavity conductors.
- f. Input admittance (Eingangsamittanz) and coupling of cavities.
- g. Input admittance of a coaxial cable terminating in a cylindric hollow space.
- h. Drawing-up of a point grid (Punktgitter) of the requested density.

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25 YEAR RE-REVIEW

STATE	x	ARMY	x	NAVY	x	AIR	x	FBI		AEC					
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i. Determining medium angular velocity of an electron flow in a cylindric hollow space.

k. Research on the exact measuring of colors.

(1) Construction of a new three-color mixer and its calibration.

(2) Objective measuring of colors by means of photoelectric cells and color filters.

The papers composed on the project mentioned were translated into Russian.

2. [redacted] the only worthwhile result achieved at the Theoretical Department was the method developed to evaluate the measurements made in the electrolytic vat. This electrolytic vat was to be utilized for static field analysis of frequency modulation tubes. It was developed by Helmut Probst and Karl Steimel. The direction of the potential lines (Potentiallinien) was measured by a cross sonde (Kreuzsonde) which, by means of a guiding device, was automatically moved along the potential lines, thus recording the static field of the tube models. The electrolytic vat was used with good results.
3. No useable calculation methods, but only approximate formulas, could be developed for magnetron tubes. On Wilhelm Grimm's suggestion, Hans Tropper developed an experimental arrangement to analyze the resonance phenomena of a magnetron. The anode was replaced by a rotating sonde. This arrangement was fed by a signal generator. The voltages at the rotating sonde were indicated by an oscillograph.

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